

REMARKS

Claims 11-12 and 14-19 are presently pending in the above-identified patent application. No claim is allowed.

Claim 19 has been rejected pursuant to 35 U.S.C. §112, second paragraph, as failing to particularly point out and distinctly claim the subject matter regarded as the invention. Claim 19 has been amended to remove reference to “said second layer of said barrier material layer.” Withdrawal of the rejection under §112, second paragraph is respectfully requested.

Claims 11, 12, 14, 15, and 17-18 have been rejected pursuant to 35 U.S.C. §103(a) as unpatentably obvious over Hawley, in view of Jain et al. and further in view of Gangopadhyay. Claim 19 has been rejected pursuant to 35 U.S.C. §103(a) as unpatentably obvious over Hawley, in view of Jain et al. and further in view of Gangopadhyay, and further in view of Forouhi.

The examiner has basically repeated the same arguments as set forth in prior rejections. It is respectfully submitted that the examiner’s response to arguments made in prior Amendments completely misstates and misapplies the law in several material respects.

First, the examiner mistakenly asserts “it is noted that the features upon which applicant relies (i.e., the unexpected markedly different and superior characteristics) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification cannot be read into the claims.”

While the examiner has correctly stated the law to the extent that limitations from the specification cannot be read into the claims, he has fundamentally misstated and misapplied the law in two material respects.

The examiner's statement that "the features upon which applicant relies (i.e., the unexpected markedly different and superior characteristics) are not recited in the rejected claims" is wholly incorrect. The markedly different and superior characteristics of the claimed antifuse are *properties* of the claimed antifuse that arise as a result of the already-claimed *structure* of the claimed antifuse. Because these markedly different and superior characteristics are *properties* of the antifuse as presently claimed they are *inherent* in the as-claimed structure and do not need to be explicitly recited in the claims. Thus, the examiner is plainly and clearly wrong in asserting that the features on which reliance is placed for patentability are not recited in the claims. The claims recite the structure of an antifuse that exhibits these markedly different and superior characteristics.

The argument previously made by the undersigned bears repeating here. Paragraph [0086] of the specification states:

When compared to the antifuse of FIG. 11, an antifuse having a Ta or TiN barrier metal layer with an amorphous carbon antifuse layer exhibits a decrease in resistance by about one order of magnitude at a programming current of about 0.5mA. Thus, the resistance decreases below 200 ohms or a magnitude of 10."

The antifuse as presently claimed in the rejected claims includes a Ta or TiN barrier metal layer and an amorphous carbon antifuse material layer.

In addition, the statements in paragraph 4 of the Declaration of Frank Hawley, already of record in this case, demonstrate additional unexpected results relating to the dramatically lower (five to twenty-five times lower than the prior art) programming currents used by the antifuses of the present invention.

These *inherent properties* of the claimed antifuse arise inherently from the "features recited in the claims" and impart to the claimed antifuse its unexpectedly

superior characteristics. In sum, the antifuse as presently claimed has a decrease in programmed resistance of an order of magnitude from the prior art antifuses and may be programmed using dramatically lower (five to twenty-five times lower than the prior art) programming currents than the prior art antifuses. These *inherent properties* arise from the as-claimed structure of the antifuse and do not need to be explicitly recited in the claims.

Second, the examiner has stated “Applicant has not provided convincing scientific evidence to support his contention that the structure of the combined teachings of the prior art does not possess the same characteristics relied on.” This statement makes no sense since “the structure of the combined teachings of the prior art” is in fact the present invention reconstructed from the fragments of three different prior art references, no one of which has the markedly superior characteristics of the claimed invention. The examiner’s statement thus essentially proposes the nonsensical proposition that the applicant must prove that his own invention (reconstructed using hindsight gathering of elements handpicked from among different references with the invention in mind) does not have the same characteristics as the claimed invention. This is factually impossible and is not now and has never been the law.

The examiner states a proposed formulation of the law as follows:

It is noted that the combined teachings of the prior art disclose the same structure as claimed. Therefore the Patent Office has reason to believe that the properties/characteristics, in fact, be an inherent characteristic of the prior art. It is a burden on applicant to provide convincing evidence to prove that the subject matter shown to be in the prior art does not possess the characteristics relied on. [citation omitted] The structure disclosed in the prior art would provide the same superior characteristics as disclosed by the present invention. It is the examiner position that combined teachings of the prior art inherently provide the same graphs in Figs 11-13 and exhibit the same characteristics as described in paragraphs [0083] through [0087] as well as paragraph 4 of the declaration.

The examiner's proposed formulation of the law would impose an insurmountable burden on patent applicants to overcome obviousness rejections and is therefore incorrect as a matter of law. First, the examiner reconstructs all of the elements of the claimed invention by using selected portions of the antifuses of several different references to put together a structure identical to that claimed in the application. Then the examiner mistakenly asserts that the properties/characteristics of the claimed antifuse are in the prior art because the combination of portions of three different prior-art antifuses is identical to the claimed antifuse.

If this was the correct test, a showing of unexpected results could never be made because the combination of elements from different prior-art references in an obviousness rejection is always the same as the claimed invention. The statement made by the examiner, the "combined teachings of the prior art inherently provide the same graphs in Figs 11-13 and exhibit the same characteristics as described in paragraphs [0083] through [0087] as well as paragraph 4 of the declaration" could always be made in every case if the test was whether the claimed invention would exhibit the same characteristics of the combined teachings of the prior art, since the "combined" teachings of the prior art are always identical to the claimed invention. Under the examiner's proposed test, the invention has to produce results that are different and unexpected when compared to itself. This is, of course, impossible to prove and is contrary to well-established law.

The law states that the applicant can establish non-obviousness by showing that the result of combining the various elements as claimed has unexpected markedly different and superior characteristics than would be predicted from the prior art. The correct test assumes that the combination of features from different references is expected to yield results that are consistent with (i.e., expected in light of) the results

exhibited by the individual references. The results that are unexpected are results that differ appreciably from the results obtained from the closest prior art.

Since none of the prior art antifuses exhibits these markedly different and superior characteristics, the results are unexpected.

Applicants believe that the above-identified application is now in condition for allowance and such action is respectfully requested.

If the Examiner has any questions regarding this application or this response, the Examiner is requested to telephone the undersigned at 775-586-9500.

Respectfully submitted,
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